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H04M 1/02

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INT CL⁷ H04M 1/02

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(54) Abstract Title

Dual display folding portable telephone

(57) A first display 4 is provided on the outer surface of the first case body 1. A second display 5 is provided on the inner surface of the first case body. A slantwise retractable antenna 9 is provided on the side of the second case body 2.

Analog and digital representations of call duration information are provided by displaying a sandglass or hourglass 10 and cumulative call duration 11 on the first display 4. Caller ID can be displayed instead of the call duration information (fig 1C).

As the radiotelephone is unfolded the information initially displayed on outer display 4 is shifted to inner display 5. The orientation of the displayed information may also be changed or rotated.

The first and second case bodies 1, 2 may include inter-engaging concave and convex portions (28, 29, fig 9A).

FIG.1B

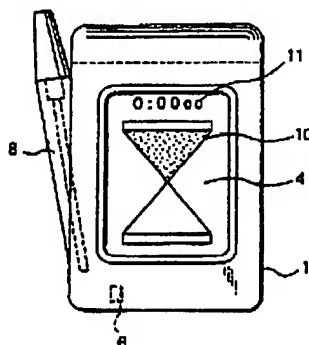
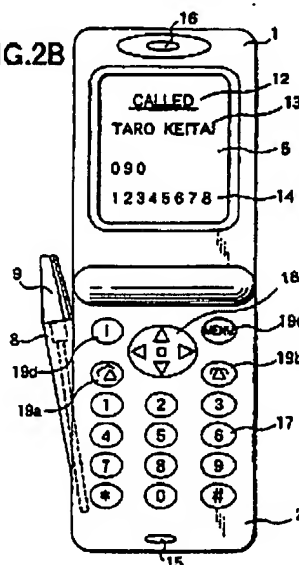


FIG.2B



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print incorporates corrections made under Section 117(1) of the Patents Act 1977.

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FIG.1A

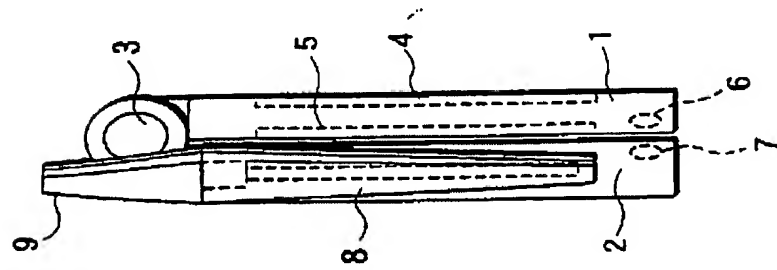


FIG.1B

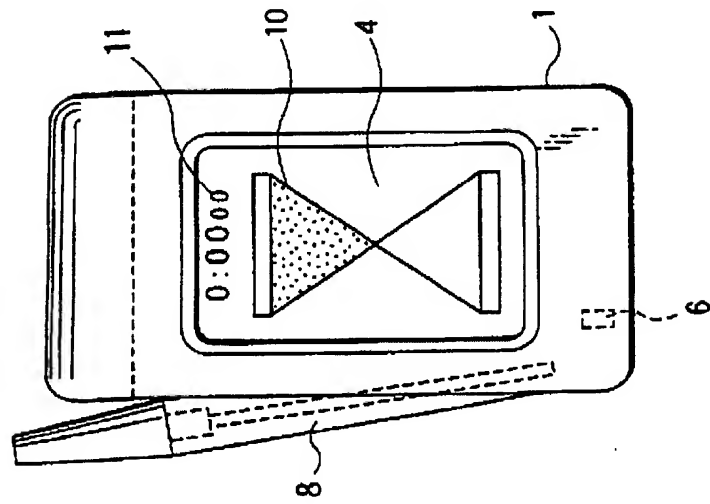
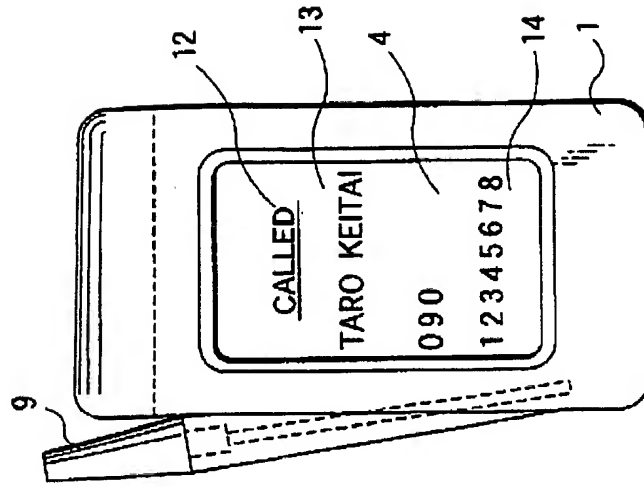


FIG.1C



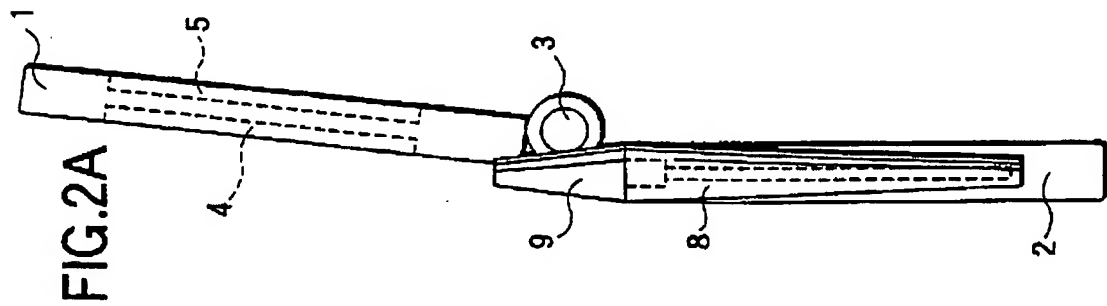


FIG. 2A

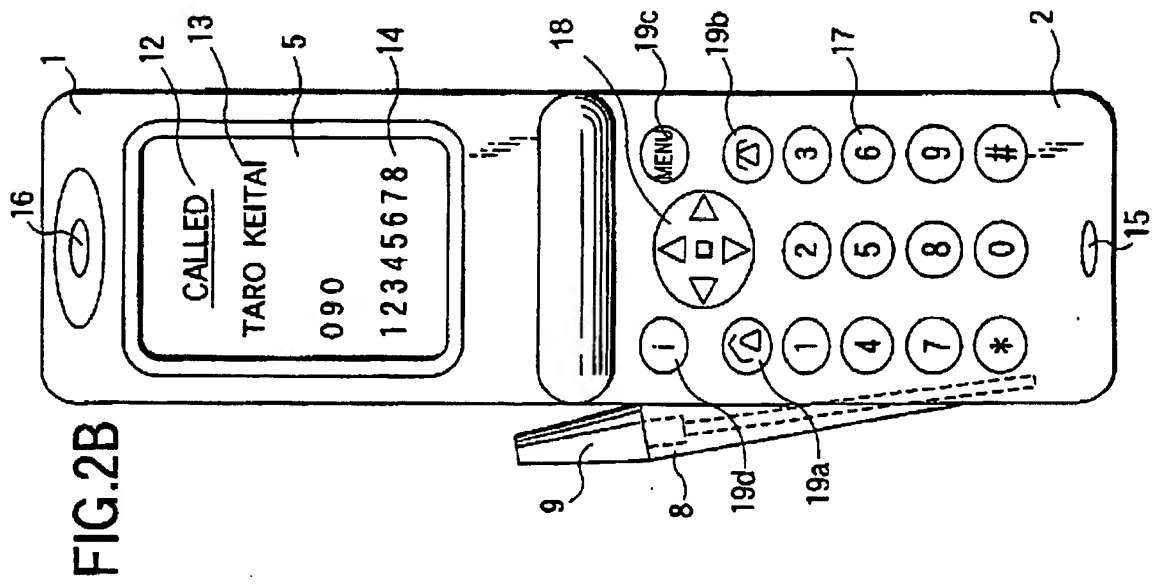


FIG. 2B

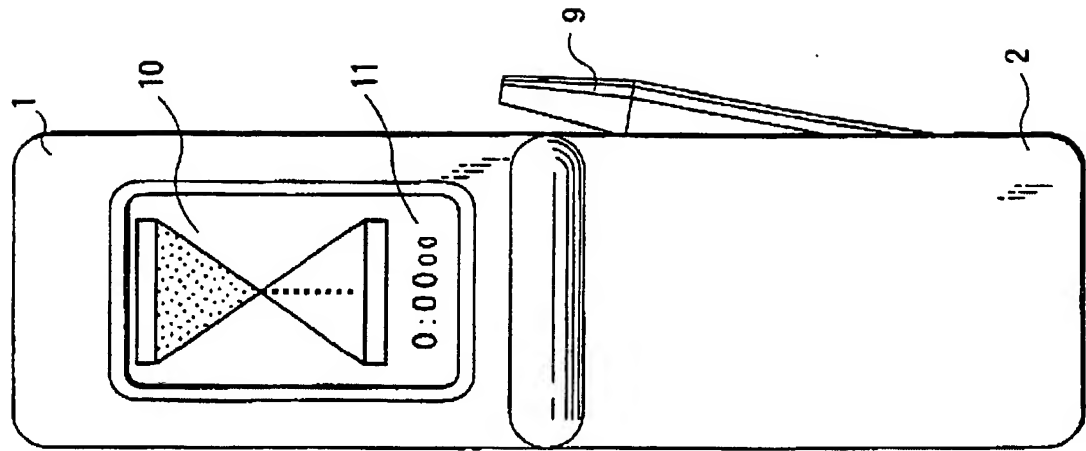


FIG. 2C

FIG.3A

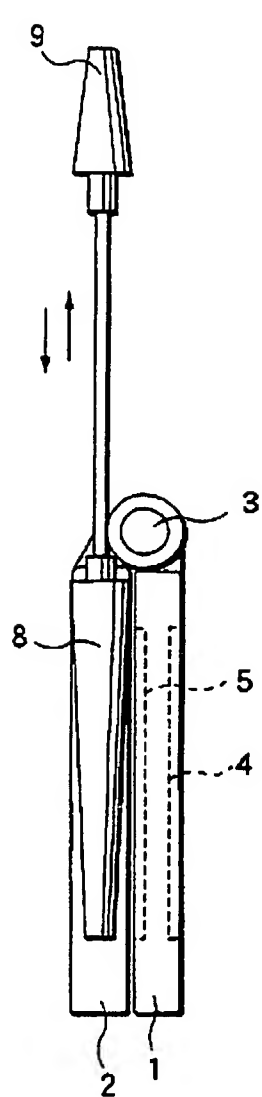


FIG.3B

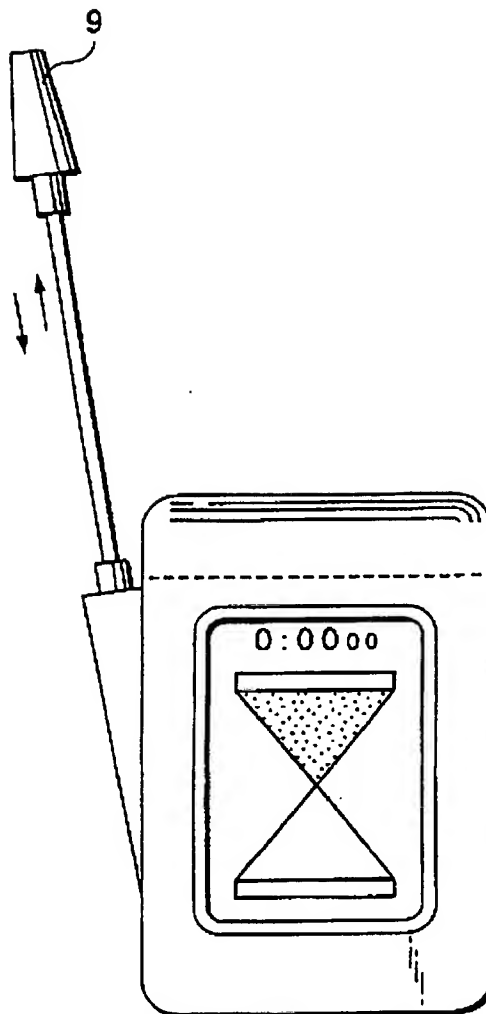


FIG.4B

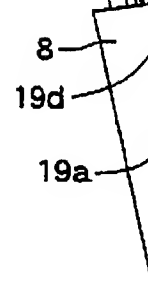
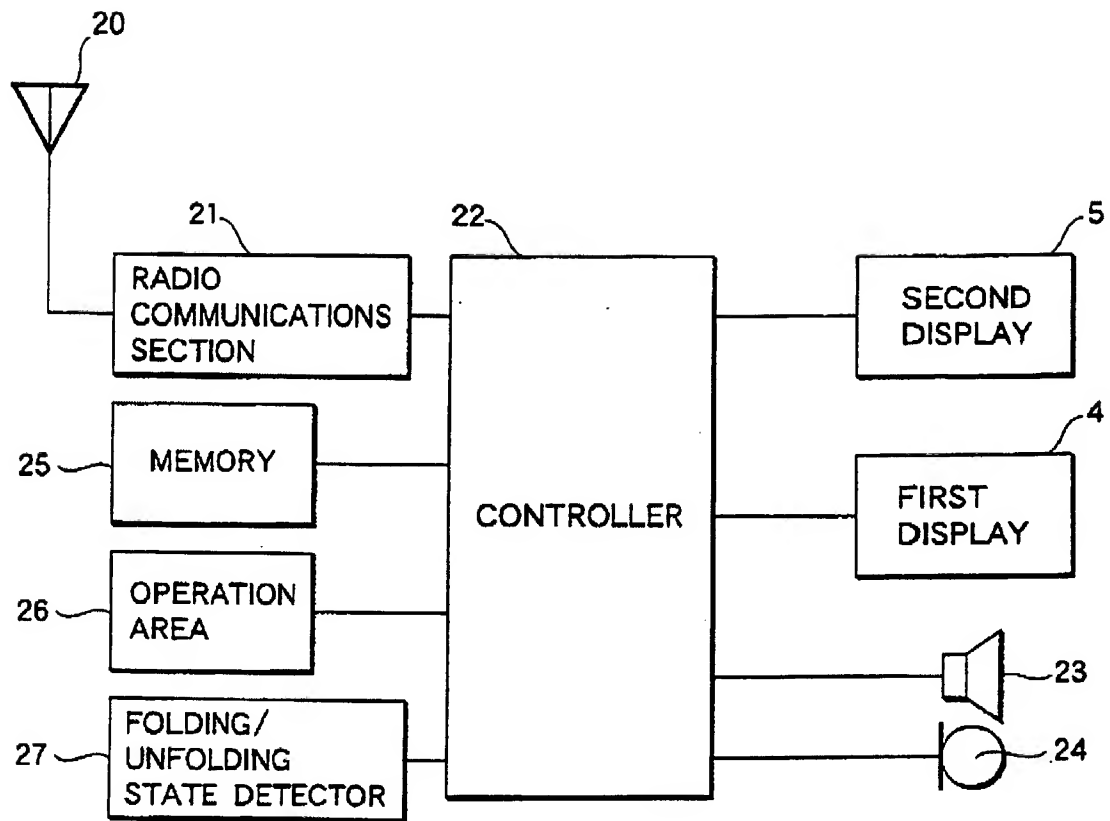


FIG.5



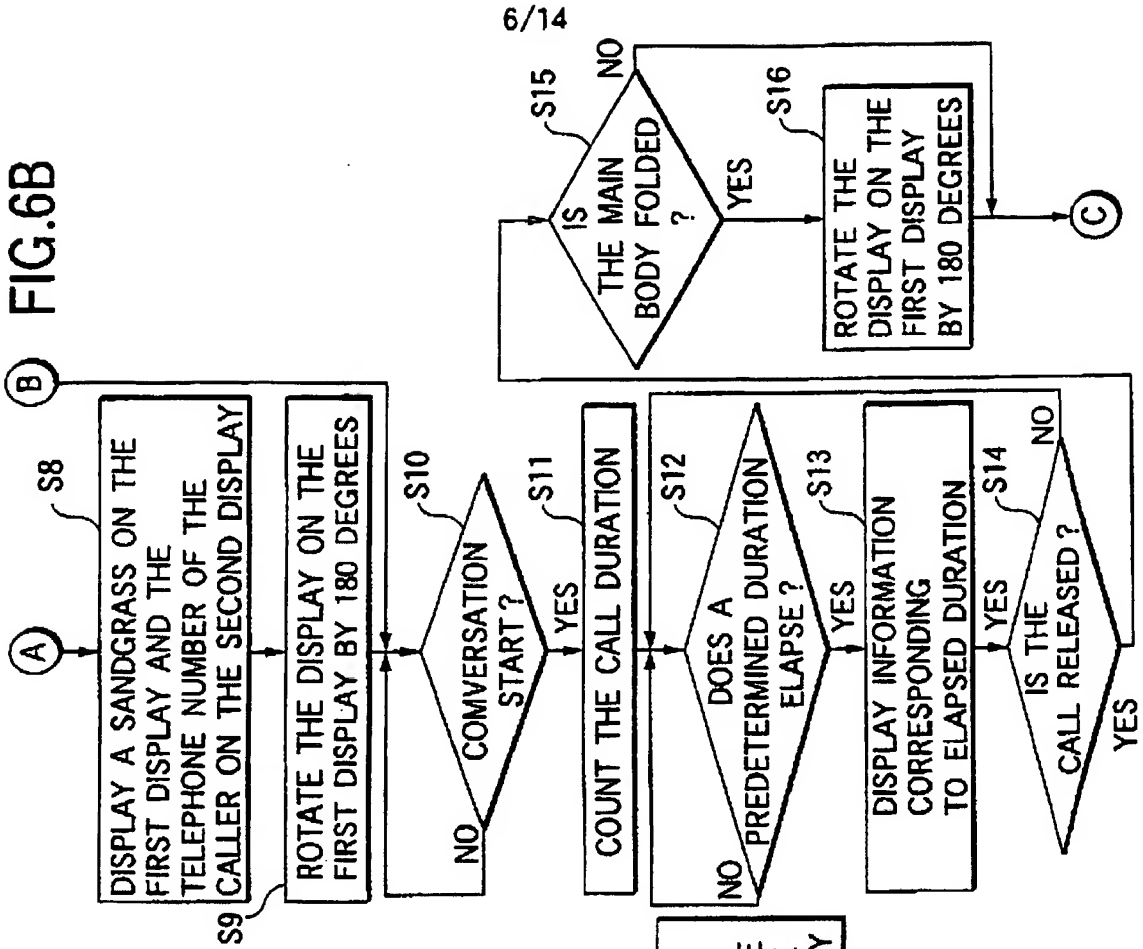
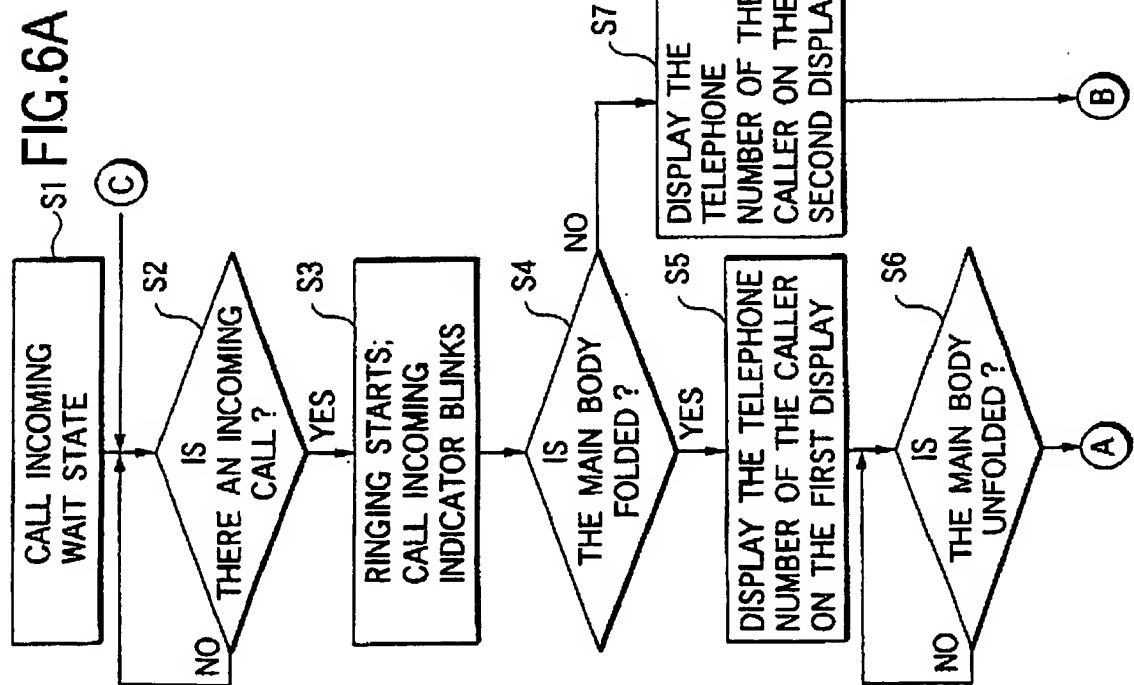


FIG. 7

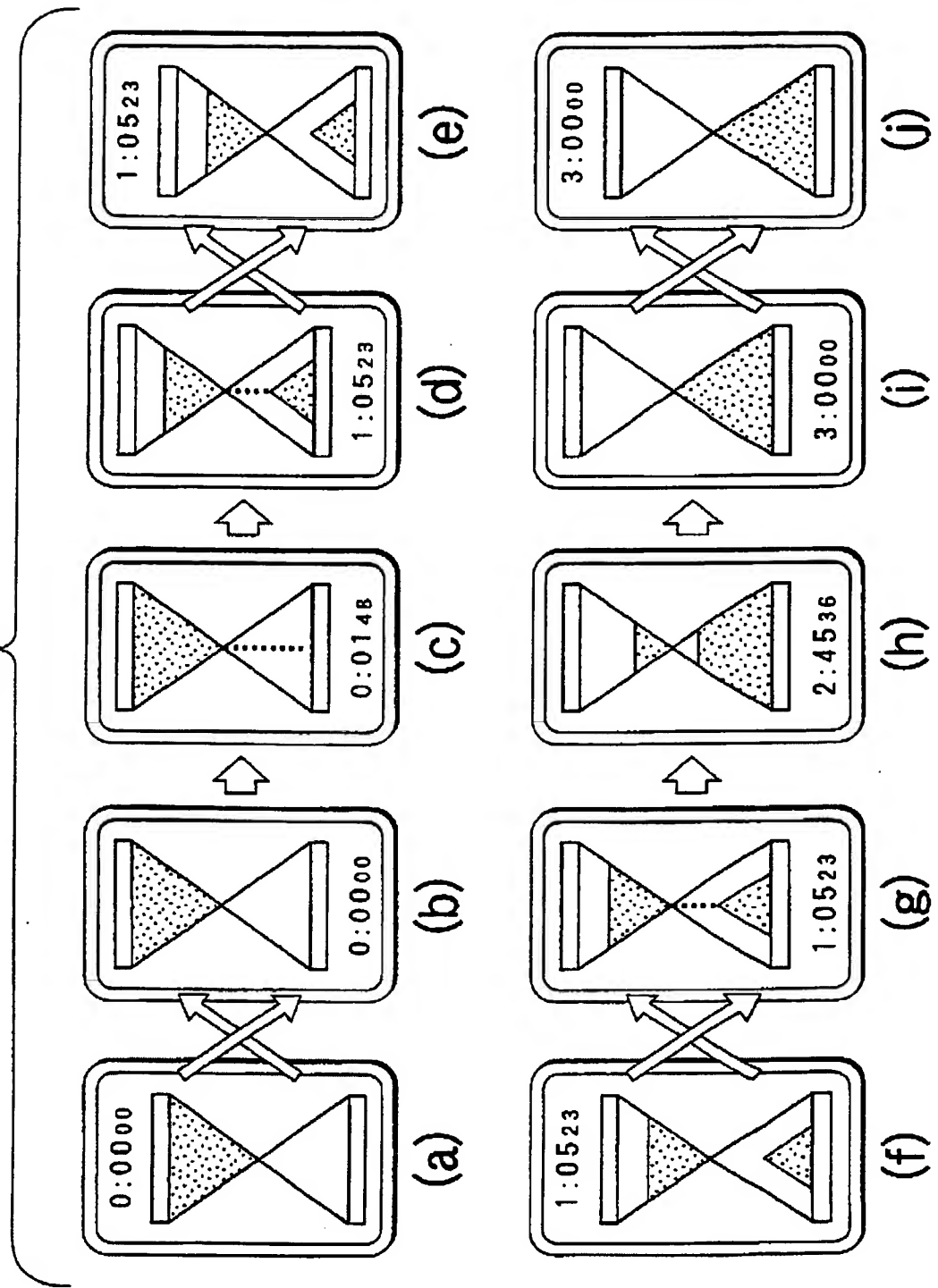


FIG.8A

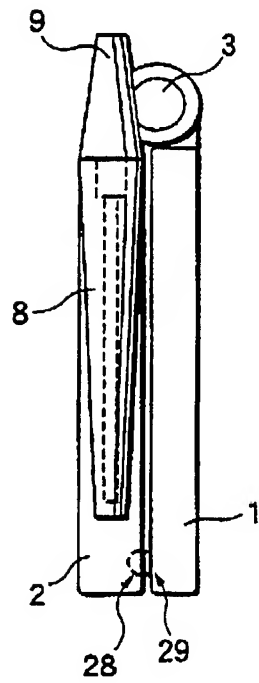


FIG.8B

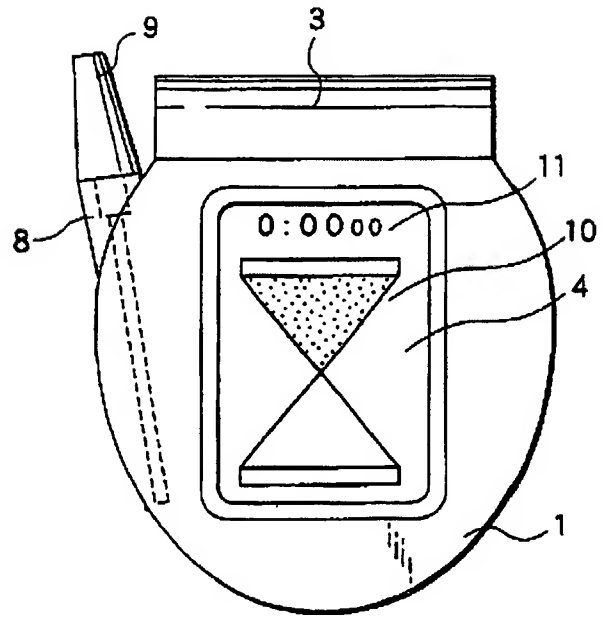


FIG.9A

FIG.9B

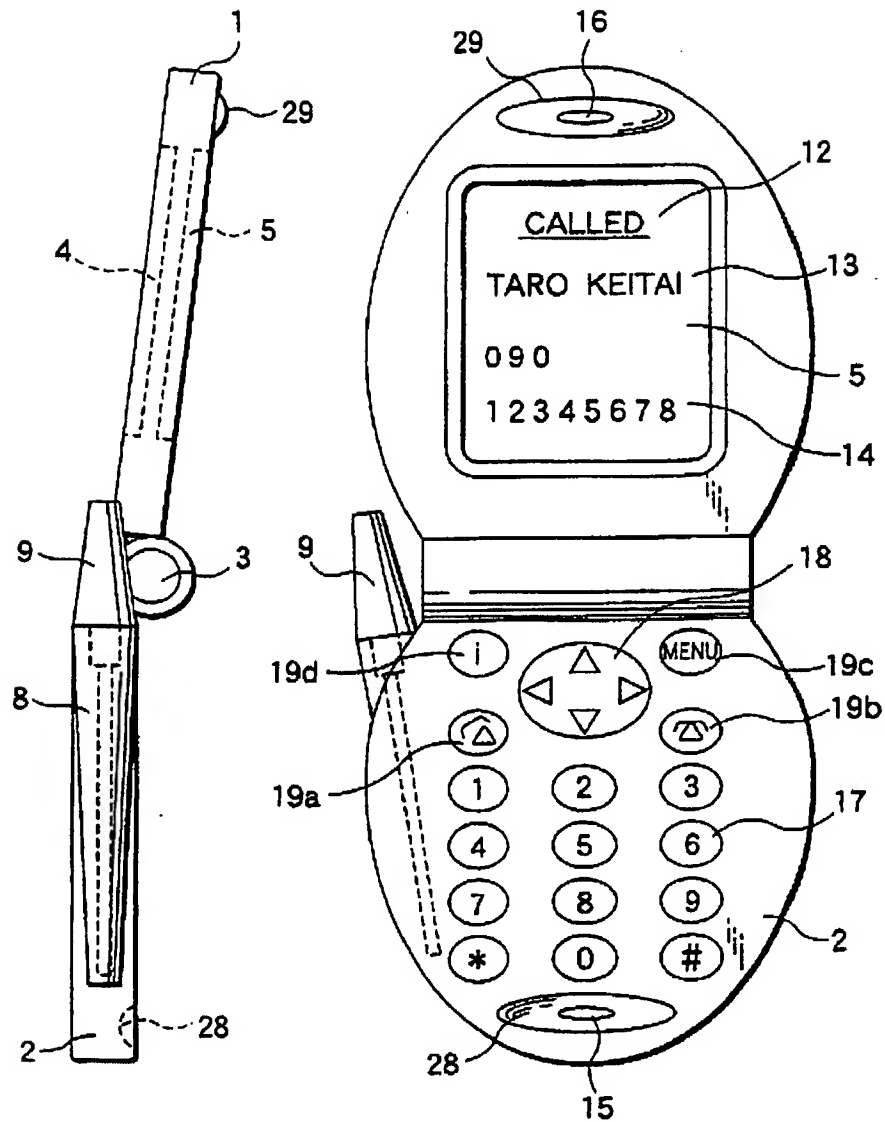


FIG.10A

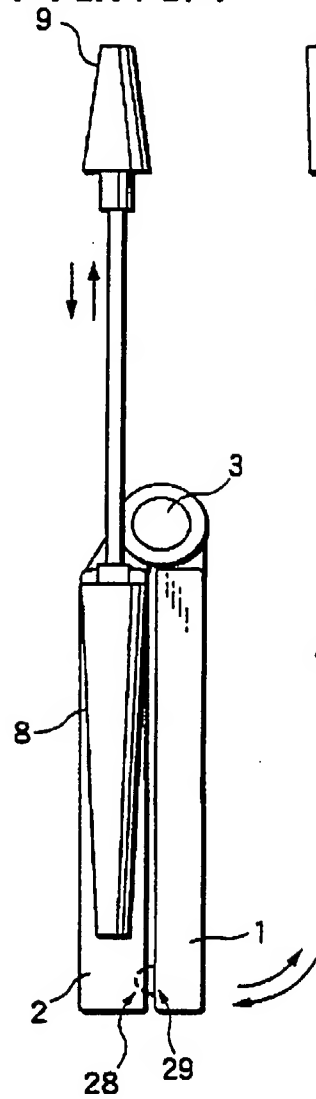


FIG.10B

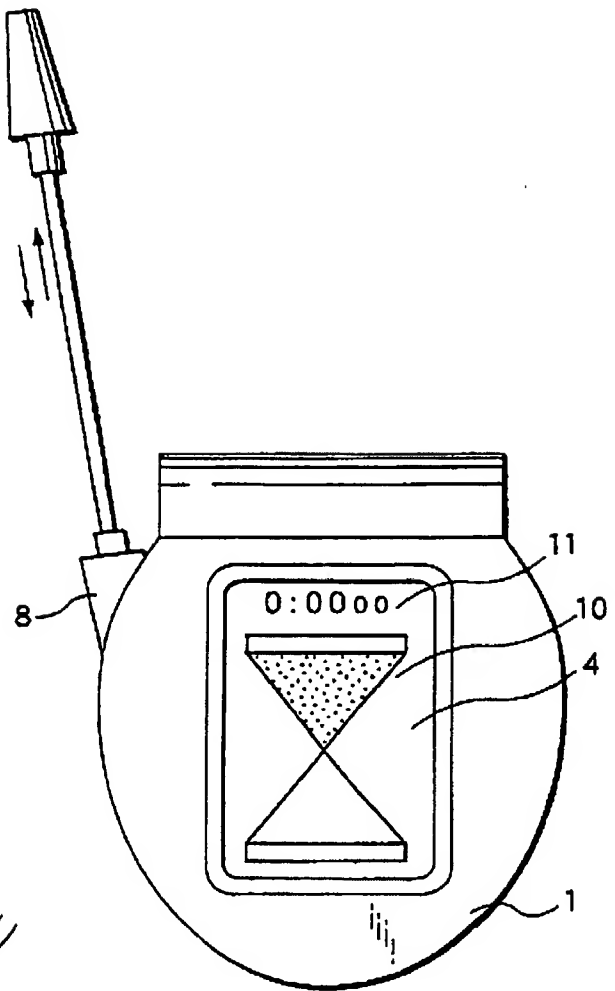


FIG.11C

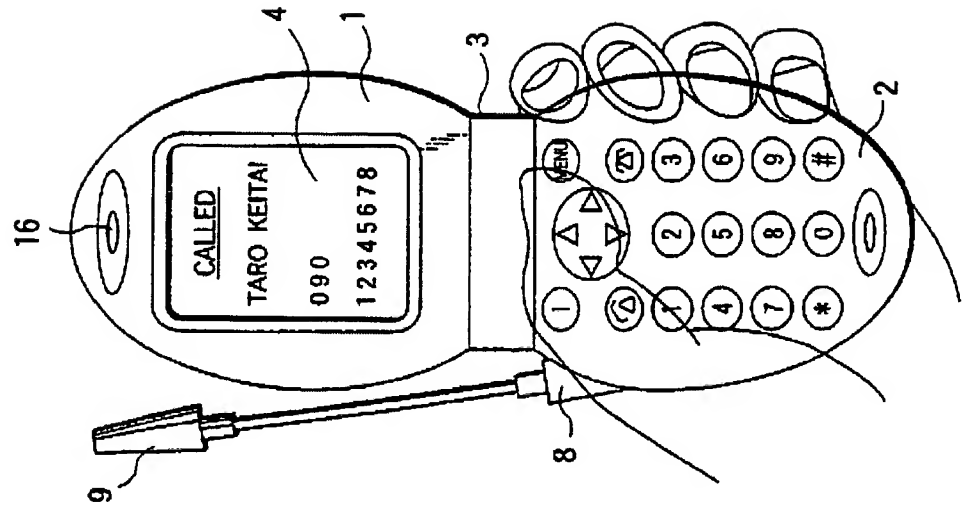


FIG.11B

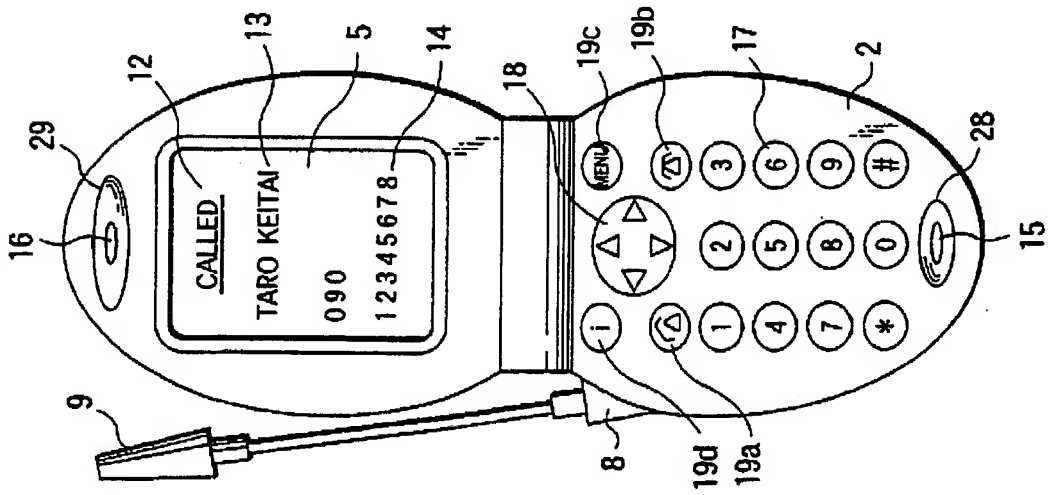


FIG.11A

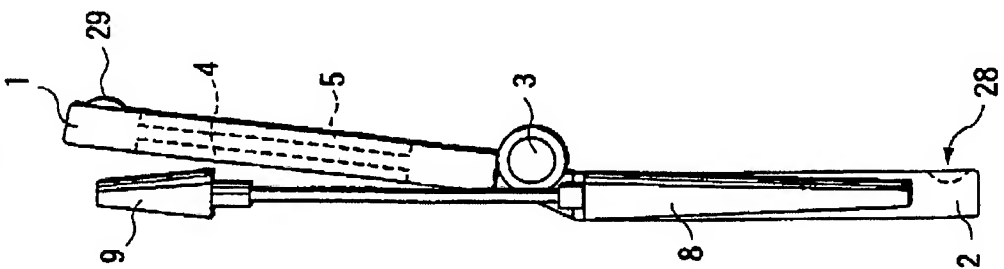


FIG.12A

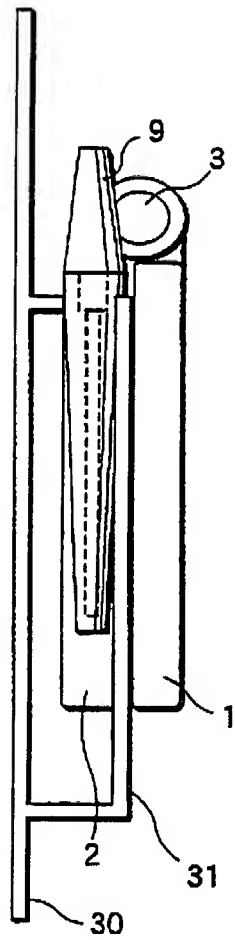


FIG.12B

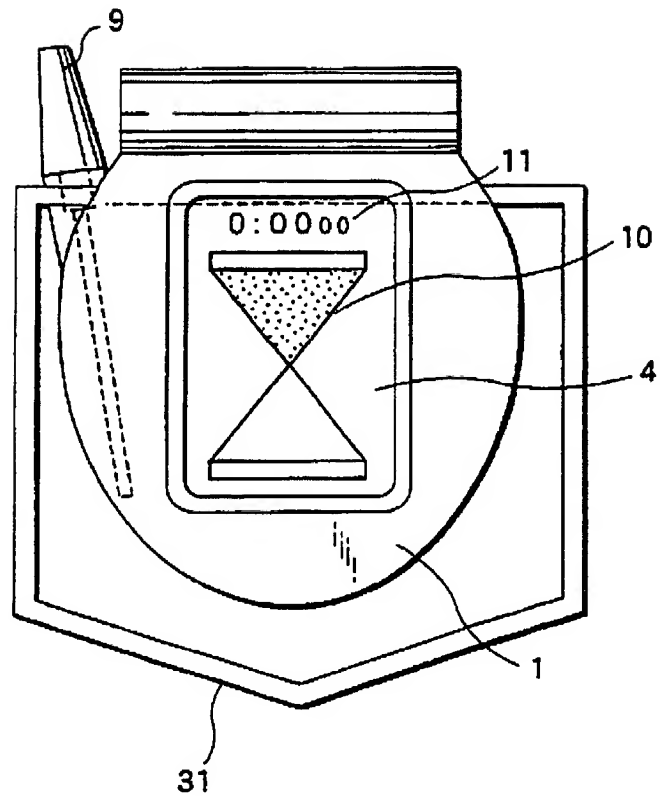


FIG.13A

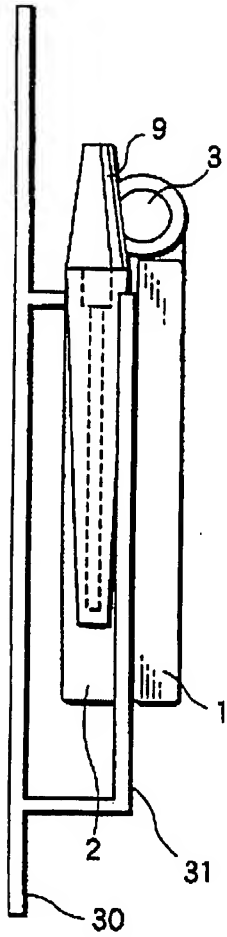


FIG.13B

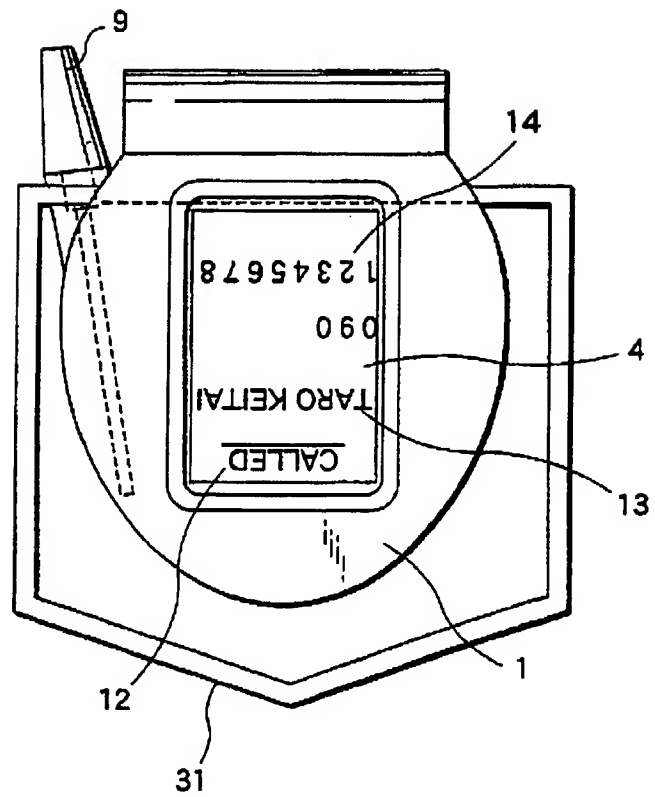
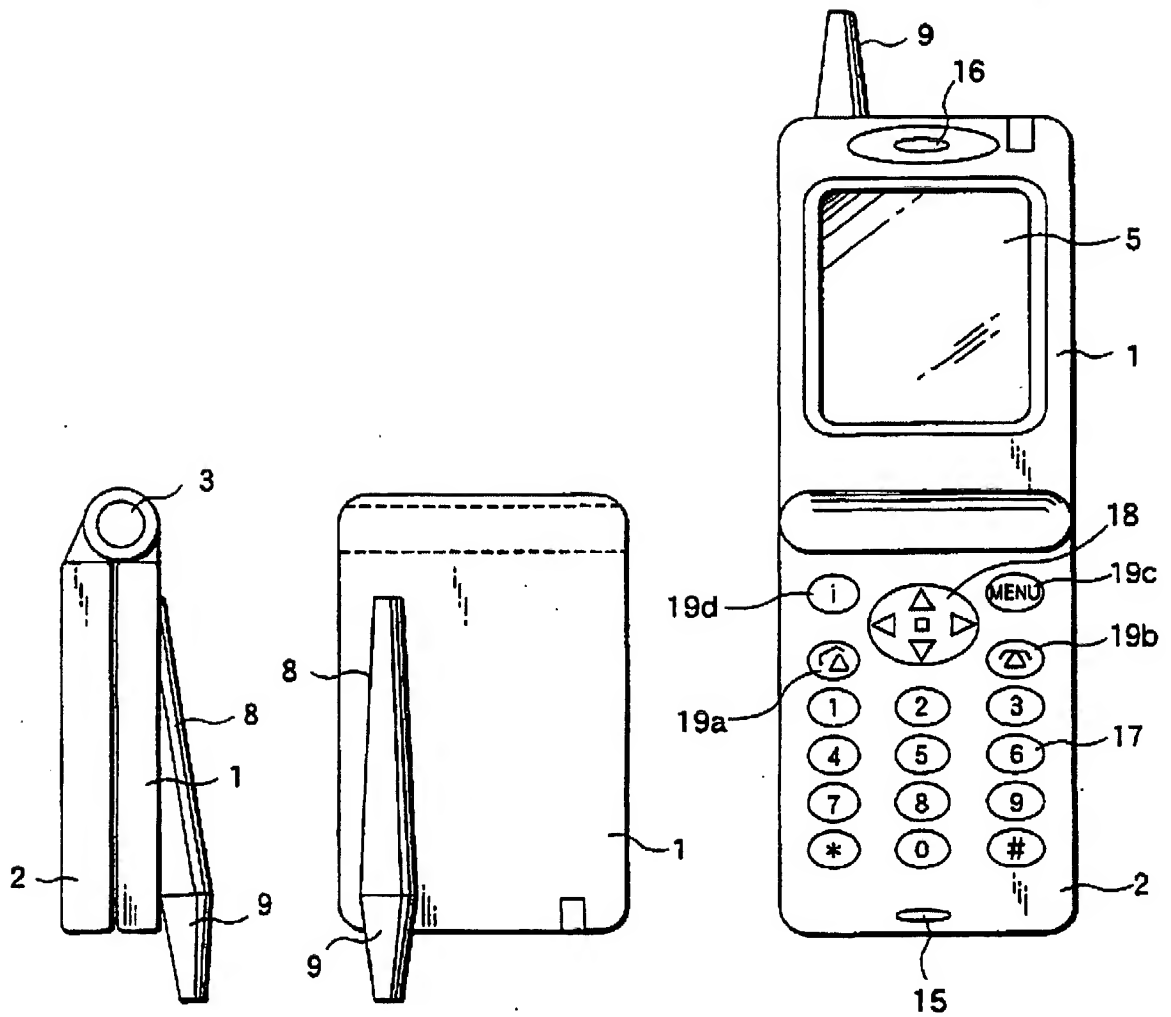


FIG.14A

FIG.14B

FIG.14C



FOLDING PORTABLE TELEPHONE APPARATUS

The present invention relates to a folding portable
5 telephone apparatus wherein the first case body and the second
case body are configured to be foldable via hinge.

In portable telephone apparatus, a number of keys are
densely arranged on the operation panel where information such
as telephone numbers are input. Moreover, a large-screen
10 liquid crystal display is necessary to display electronic mails
and characters for non-voice information service. This
inevitably upsizes the body of the portable telephone
apparatus.

Thus, there emerged folding portable telephone apparatus
15 for example as shown in Fig. 14 which is unfolded when used
and folded in two and carried along in compact size when not
used. Such apparatus has a problem that the body is unfolded
when used and the operation area faces the display area when
the body is folded. Thus, neither the display area nor the
20 operation area cannot be seen or touched from outside with the
body folded. The user cannot check received caller
information or non-voice information comprising text and
graphics with the body folded in compact size.

Recently, pre-paid portable telephone apparatus is on
25 the market for which the user pays the charge for a

predetermined call duration or a duration corresponding to a charge on purchase. The foregoing conventional portable telephone apparatus has a disadvantage that the user cannot check the remaining allowable call duration directly.

5

The present invention aims at providing a folding portable telephone apparatus that eliminates the foregoing conventional disadvantage and allows the user to check incoming call information including the telephone number of a caller or the caller's name from outside with the body folded, and to check the remaining allowable call duration from outside, such as in pre-paid portable telephone apparatus.

The first aspect of the invention is a folding portable telephone apparatus having at least a folding main body, first display on the outer surface of the main body and second display on the inner surface of the main body, wherein the apparatus is adapted to display incoming call information on the first display on the outer surface of the main body while the main body is folded and to display incoming call information on the second display on the inner surface of the main body while the main body is unfolded. Via this configuration, the information can be displayed on the display corresponding to the folding/unfolding state of the main body.

The second aspect of the invention is a folding portable

telephone apparatus according to the first aspect of the invention, wherein the incoming call information contains at least the telephone number of a caller or the caller's name. Via this configuration, the user can see the information on the caller even when the main body is folded.

The third aspect of the invention is a folding portable telephone apparatus according to the first or second aspect of the invention having at least a folding main body, first display on the outer surface of the main body and second display on the inner surface of the main body, wherein the apparatus is adapted to switch from the first display to the second display on the inner surface of the main body when the main body has been unfolded while incoming call information is displayed on the second display on the inner surface of the main body as well as to delete the information on the first display and to display predetermined information. Via this configuration, it is possible to transfer the information to the second display when the main body is unfolded as well as to display information such as call duration.

The fourth aspect of the invention is a folding portable telephone apparatus according to any of the first to third aspect of the invention, wherein the top and bottom of incoming call information displayed on the first display in the main body is determined according to the top and bottom of incoming call information displayed on the second display. Via this

configuration, it is possible to see the image in the right top-and-bottom arrangement although the top and bottom of the first display are reversed while the first case body is unfolded.

5 The fifth aspect of the invention is a folding portable telephone apparatus, wherein a display is provided on the outer surface of a folding main body in order to display call duration on the display and that information is displayed in a first direction on the first display while the main body is folded
10 and in the direction 180 degrees rotated against the display, that is, so-called in the reverse direction on the display while the main body is unfolded. Via this configuration, it is possible to see the image in the right top-and-bottom arrangement although the top and bottom of the first display
15 are reversed while the first case body is unfolded.

 The sixth aspect of the invention is a folding portable telephone apparatus, wherein a display is provided on the outer surface of a folding main body and that image is displayed in a first direction on the display while the main body is folded
20 and in the direction 180 degrees rotated against the display, that is, so-called in the reverse direction on the display while the main body is unfolded. Via this configuration, it is possible to see the image in the right top-and-bottom arrangement although the top and bottom of the first display
25 are reversed while the first case body is unfolded.

The seventh aspect of the invention is a folding portable telephone apparatus according to the sixth aspect of the invention, wherein call duration is displayed on the display. Via this configuration, it is possible to see call duration
5 via clock display and so on in the right top-and-bottom arrangement.

The eighth aspect of the invention is a folding portable telephone apparatus wherein the first case body having a receiver and the second case body having a transmitter are
10 configured to be collapsible via hinge, wherein, concerning the section where the receiver or transmitter is located, the corresponding section of one main body is made into a convex section and the corresponding section of the other main body is made into a concave section and that energizer is provided
15 for making the convex section and the concave section engaging each other as well as for giving a pressing force or absorbing force when the main body is folded. Via this configuration, it is possible to place the apparatus in a pocket of clothes with the apparatus pinching the tissue of the pocket.

20 Particular embodiments in accordance with this invention will now be described with reference to the accompanying drawings, in which:-

Fig. 1A is a side view of folding portable telephone apparatus according to the first embodiment of the invention with the main body folded.

25 Fig. 1B is a front view of the folding portable telephone

apparatus according to the first embodiment of the invention with the main body folded.

Fig. 1C is a front view of the folding portable telephone apparatus according to the first embodiment of the invention
5 with the main body folded.

Fig. 2A is a side view of the folding portable telephone apparatus according to the first embodiment of the invention with the main body unfolded.

Fig. 2B is a front view of the folding portable telephone
10 apparatus according to the first embodiment of the invention with the main body unfolded.

Fig. 2C is a rear view of the folding portable telephone apparatus according to the first embodiment of the invention with the main body unfolded.

15 Fig. 3A is a side view of folding portable telephone apparatus according to the first embodiment of the invention with the main body folded and the antenna stretched.

Fig. 3B is a front view of folding portable telephone apparatus according to the first embodiment of the invention
20 with the main body folded and the antenna stretched.

Fig. 4A is a side view of folding portable telephone apparatus according to the first embodiment of the invention with the main body unfolded and the antenna stretched.

Fig. 4B is a front view of folding portable telephone
25 apparatus according to the first embodiment of the invention

with the main body unfolded and the antenna stretched.

Fig. 5 is a block diagram showing a configuration of folding portable telephone apparatus according to the first embodiment of the invention.

5 Fig. 6 is a flowchart showing the procedure for displaying incoming call information according to the first aspect of the invention.

Fig. 7 is an exemplary transition diagram showing the elapse of call duration of the call duration information that
10 makes transition with time according to the first embodiment of the invention.

Fig. 8A is a side view of folding portable telephone apparatus according to the second embodiment of the invention with the main body folded.

15 Fig. 8B is a front view of folding portable telephone apparatus according to the second embodiment of the invention with the main body folded.

Fig. 9A is a side view of folding portable telephone apparatus according to the second embodiment of the invention
20 with the main body unfolded.

Fig. 9B is a front view of folding portable telephone apparatus according to the second embodiment of the invention with the main body unfolded.

Fig. 10A is a side view of folding portable telephone
25 apparatus according to the second embodiment of the invention

with the main body folded and the antenna stretched.

Fig. 10B is a front view of folding portable telephone apparatus according to the second embodiment of the invention with the main body folded and the antenna stretched.

5 Fig. 11A is a side view of folding portable telephone apparatus according to the second embodiment of the invention with the main body unfolded and the antenna stretched.

Fig. 11B is a front view of folding portable telephone apparatus according to the second embodiment of the invention
10 with the main body unfolded and the antenna stretched.

Fig. 12A is a side view of folding portable telephone apparatus according to the second embodiment of the invention with the main body with the main body housed in a pocket of clothes.

15 Fig. 12B is a front view of folding portable telephone apparatus according to the second embodiment of the invention with the main body with the main body housed in a pocket of clothes.

Fig. 13A is a side view of folding portable telephone
20 apparatus according to the second embodiment of the invention with the main body with the main body housed in a pocket of clothes.

Fig. 13B is a front view of folding portable telephone
25 apparatus according to the second embodiment of the invention with the main body with the main body housed in a pocket of

clothes.

Fig. 14A is a side view of conventional folding portable telephone apparatus with the main body folded.

Fig. 14B is a front view of conventional folding portable
5 telephone apparatus with the main body folded.

Fig. 14C is a front view of conventional folding portable telephone apparatus with the main body unfolded.

10

Fig. 1A is a side view of a folding portable telephone apparatus according to the first embodiment of the invention with the main body folded. Fig. 1B is a front view of the
15 folding portable telephone apparatus according to the first embodiment of the invention with the main body folded. Fig. 1C is a front view of the folding portable telephone apparatus according to the first embodiment of the invention with the main body folded, the apparatus displaying incoming call
20 information when a call has received. Fig. 2A is a side view of the folding portable telephone apparatus according to the first embodiment of the invention with the main body unfolded. Fig. 2B is a front view of the folding portable telephone apparatus according to the first embodiment of the invention
25 with the main body unfolded, the apparatus displaying incoming

call information when there has been an incoming call. Fig. 2C is a rear view of the folding portable telephone apparatus according to the first embodiment of the invention with the main body unfolded, the first display displaying call duration
5 information as a sandglass.

Configuration of the folding portable telephone apparatus will be briefly explained with reference to Fig. 1 and Fig. 2. A first case body 1 and a second case body 2 of the portable telephone apparatus in Fig. 1A are coupled via
10 a hinge 3 so that the first case body 1 and the second case body 2 can be folded or unfolded via the hinge 3. As shown in Fig. 1B, first display 4 comprising a liquid crystal display is provided on the outer surface of the first case body 1.

On the inner surface of the first case body 1 is provided
15 the second display 8. On the side of the second case body 2 is provided an antenna 9 retractable slantwise. In the first case body 1 is embedded a magnet 6 and in the second case body 2 is embedded a lead switch 7. When the main body is folded to bring the magnet 6 in close proximity to the lead switch
20 7, the lead switch 7 is turned ON. When the main body is unfolded to place the magnet 6 apart from the lead switch 7, the lead switch 7 is turned OFF. Thus, fold/unfold state of the main body can be detected.

Fig. 1B shows both analog and digital representations
25 of call duration information by displaying a sandglass 10 and

cumulative call duration 11 on the first display 4. In Fig. 1C, when an incoming call has been received, an indication of receiving an incoming call 12, caller's name 13 and the telephone number of the caller 14, as incoming call information on call incoming, are displayed on the first display 4, instead of the call duration information.

Fig. 2A shows folding portable telephone apparatus with the first case body 1 unfolded upward. Unfolding the first case body 1 causes controller mentioned later to display text and graphics information on the second display 5 on the inner surface of the first case body. In the meantime, information which is displayed on the first display 4 when the body is folded, is deleted. Instead, a predetermined information, such as call duration information, is displayed.

On the inner surface of the second case body 2 shown in Fig. 2B are provided a key operation area composed of a ten-digit keypad 17, a so-called navigation key 18 including arrow keys for scrolling in four directions and a center key for determining target information, a call start key 19a, a call release key 19b, a menu key 19c, a non-voice radio communications service start key 19d for receiving the non-voice radio communications service such as the i mode. In the lower area of the second case body 2 is provided a transmitter (microphone) 15 and in the upper area of the first case body 1 a receiver (speaker) 16.

Fig. 3A and Fig. 4A are side views of the folding portable telephone apparatus according to the first embodiment of the invention with the antenna stretched. Fig. 3B and Fig. 4B are front views of the folding portable telephone apparatus according to the first embodiment of the invention with the antenna stretched. The invention supports an antenna 9 retractably from bottom to top via an antenna receiver section 8 on the side of the second case body 2 so that it is possible to fold/unfold the first case body 1 irrespective of the direction of the antenna 9 and whether the antenna 9 is stretched or housed.

Fig. 5 is a block diagram of a simple configuration of folding portable telephone apparatus according to an embodiment of the invention. In Fig. 5, the controller 22 displays call duration information shown in Fig. 1B on the first display 4 in the call incoming wait state. When an incoming call, radio waves coming from an antenna 20 are received by the receiver (not shown) of a radio communications section 21 and received information is transferred to a controller 22. The controller 22 displays the received information such as telephone numbers on the first display 4 on the outer surface of the main body or on the second display 5 on the inner surface of the main body. When the main body is folded, incoming call information is displayed instead of call duration information displayed in the call incoming wait state. When the main body

is unfolded, incoming call information is displayed on the second display 5 on the inner surface of the first case body 1.

The controller 22 converts received information to voice information and outputs the voice information from a receiver (speaker) 23. The transmitter (microphone) 24 transfers the user's voice to the controller 22 and transmits the information to the distant party via a transmitter (not shown) of the radio communications section 21 and the antenna 20. A key operation area 26 composed of a ten-digit key and a scroll key is adapted to input signals to the controller 22 via key operation and to store telephone number information, etc. in the memory 25 via the controller 22.

When the user uses the ten-digit keypad 17 (Fig. 2B) to enter a telephone number and press the call start key 19a, the controller 22 transmits the information to a base station via a transmitter (not shown) of the radio communications section 21 and the antenna 20. The user can also enjoy services such as the i mode. In this case, when the non-voice radio communications service information is transmitted from the base station, the information is received via the antenna 20 and the receiver (not shown) of the radio communications section 21 and the controller stores the received information in the memory 25.

The cover folding/unfolding state detector 27, on

detecting the cover folding/unfolding state, transfers the detected information to the controller 22. The controller 22, based on the above detected results, displays the non-voice information stored in the memory 25 on the first display 4 or
5 second display 5 corresponding to the folding/unfolding state of the main body.

Fig. 6A is a flowchart showing the operation in which the folding portable telephone apparatus according to the first embodiment of the invention has a incoming call from the call
10 incoming wait state. With the folding portable telephone apparatus powered on and in the call incoming wait state (step 1), when an incoming call (step 2), ringing starts or a call incoming indicator or a backlight on the first display or the second display blinks (steps 3 and 7).

15 The controller 22 obtains folding/unfolding state information from the cover folding/unfolding state detector 27 and determines whether the body is folded or unfolded (step 4). When the body is folded, the controller 22 displays caller information, i.e., the telephone number of the caller or
20 caller's name on the first display 4 on the outer surface of the folded main body (step 5). When the user unfolds the main body to answer the call (step 6), the incoming call information displayed on the first display 4 is deleted. Instead, call duration information such as a sandglass 10 is displayed and
25 incoming call information such as the telephone number of the

caller is displayed on the second display 5 (step 8).

Because the first case body rotates about the hinge 3 and comes upside down when the apparatus is unfolded, the controller 22 rotates the display on the first display by 180 degrees (step 9). When the call start key 19a is pressed (step 10), the controller counts call duration (step 11). As the call duration elapses (step 12), information corresponding to the elapse of a predetermined duration, for example a figure of sandglass or numerals of cumulative call duration, is displayed (step 13). When the call is released (step 14), the controller 22 deletes the incoming call information display and checks whether the main body is folded or not (step 15).

When the main body is folded, the controller 22 rotates the display on the first display 4 by 180 degrees (step 16), and waits for another incoming call. When the main body is unfolded on call incoming, the controller 22 displays incoming call information on the display 5 (step 7). When the main body is unfolded on call released, the controller 22 waits for another incoming call (step 15).

Fig. 7 is an exemplary transition diagram showing the elapse of call duration of the call duration information displayed on the first display of pre-paid portable telephone apparatus having three hours of call duration. In Fig. 7, (a) shows a state in which the first body is folded, with cumulative call duration 11 being "0:00 00" the apparatus just purchased

and the sandglass 10 full of sand in the upper section. When
a call incoming and the first case body is unfolded upward,
the first case body itself comes upside down about the hinge
3. As shown in (b), a display rotated by 180 degrees so that
5 a normal representation of the information regarding top and
bottom can be seen. As the call duration elapses, the sand
gradually moves from the upper section to lower section, as
shown in (c) and (d) of Fig. 7.

When the call is released and the first case body is
10 unfolded, the first case body comes upside down again although
the display is rotated by 180 degrees as shown in Fig. 7(e)
in order to provide a normal representation of the information.
On another call incoming, display changes as shown in Fig. 7(f),
(g), (h), (i), and (j), same as the foregoing operation.

15 Fig. 8 shows a second embodiment of the invention in which
the outward appearance of the first case body 1 and the second
case body 3 is in an approximate egg shape and supported in
a collapsible fashion via the hinge shorter than the length
of the main body in the direction of width. The antenna 9 is
20 retractably supported slantwise from bottom to top via an
antenna receiver section 8 on the side of the second case body
2.

Fig. 9 shows a folding portable telephone apparatus with
the main body unfolded. Two egg-shaped case bodies are coupled
25 via a short hinge 3 and the antenna 9 is arranged at the neck

of the two egg-shaped case bodies.

Figs. 10 and 11 show the folding portable telephone apparatus with the antenna stretched. In particular, as shown in Fig. 11, the antenna 9 is stretched slantwise and upward
5 out of the second case body, along the external shape of the first case body 1, from the neck of the main body. Fig. 11C shows an external view of folding portable telephone apparatus while it is grasped. The apparatus fits the user's hand well and easy to grasp.

10 As understood from the side views of Fig. 9A and Fig. 11A, in close proximity to the transmitter 15 is formed a concave section 28 and in close proximity to the receiver 16 is formed a convex section 29. With the main body folded, the concave section 28 and the convex section 29 engage each other
15 as shown in Fig. 8A and Fig. 10A. Although not shown, an urging mechanism, such as a plate spring and a torsion coil spring, is provided at the hinge 3 for giving the force so that the first case body 1 and the second case body are pressed each other when the main body is folded. The urging mechanism may
20 be magnets embedded in the tips of the main body in order to attract the case bodies 1 and 2 each other when the main body is folded.

The concave section in close proximity to the transmitter 15 has an advantage of collecting the user's voice. The convex
25 section in close proximity to the received 16 has an advantage

of transmitting sound securely, like an earphone in the ear.

Figs. 12 and 13 show the folding portable telephone apparatus according to the second embodiment of the invention housed in a pocket 31 of clothes 30. As shown in Fig. 12A, the apparatus is housed with the first case body 1 out of the pocket 31 and the second case body 2 in the pocket 31, and the first case body 1 and the second case body 2 pinching the pocket 31. When the main body is folded, the concave section 28 and the convex section 29 engages each other so that the concave section 28 and the convex section 29 work as an alligator clip onto the tissue of the pocket 31. While conventional folding portable telephone apparatus is compact and may be dropped inadvertently, the concave section 28 and the convex section 29 play the role of an anti-drop mechanism to the relief of the user.

Fig. 13 shows incoming call display provided on receiving an incoming call with folding portable telephone apparatus housed in the pocket 31. Unlike Fig. 1, incoming call information is normally displayed to the user with the apparatus housed in the pocket 31.

As mentioned earlier, the first aspect of the invention is folding portable telephone apparatus having at least a folding main body, first display on the outer surface of the main body and second display on the inner surface of the main body, wherein the apparatus is adapted to display incoming call

information on the first display on the outer surface of the main body while the main body is folded and to display incoming call information on the second display on the inner surface of the main body while the main body is unfolded. This configuration has an advantage that the information can be displayed on the display corresponding to the folding/unfolding state of the main body.

The second aspect of the invention is folding portable telephone apparatus according to the first aspect of the invention, wherein the incoming call information contains at least the telephone number of a caller or the caller's name. This configuration has an advantage that the user can see the information on the caller even when the main body is folded.

The third aspect of the invention is folding portable telephone apparatus according to the first or second aspect of the invention having at least a folding main body, first display on the outer surface of the main body and second display on the inner surface of the main body, wherein the apparatus is adapted to switch from the first display to the second display on the inner surface of the main body when the main body has been unfolded while incoming call information is displayed on the first display as well as to delete the information on the first display and to display predetermined information. This configuration has an advantage that it is possible to transfer the information to the second display when

the main body is unfolded as well as to display information such as call duration.

The fourth aspect of the invention is folding portable telephone apparatus according to any of the first to third
5 aspect of the invention, wherein the top and bottom of incoming call information displayed on the first display in the main body is determined according to the top and bottom of incoming call information displayed on the second display. This configuration has an advantage that it is possible to see the
10 image in the right top-and-bottom arrangement although the top and bottom of the first display are reversed while the first case body is unfolded.

The fifth aspect of the invention is folding portable telephone apparatus, wherein a display is provided on the outer
15 surface of a folding main body in order to display call duration on the display and that information is displayed in a first direction on the display while the main body is folded and in the direction 180 degrees rotated against the first display, that is, so-called in the reverse direction on the display while
20 the main body is unfolded. This configuration has an advantage that it is possible to see the image in the right top-and-bottom arrangement although the top and bottom of the first display are reversed while the first case body is unfolded.

The sixth aspect of the invention is folding portable
25 telephone apparatus, wherein a display is provided on the outer

surface of a folding main body and that information is displayed in a first direction on the first display while the main body is folded and in the direction 180 degrees rotated against the first display, that is, so-called in the reverse direction on
5 the second display while the main body is unfolded. This configuration has an advantage that it is possible to see the image in the right top-and-bottom arrangement although the top and bottom of the first display are reversed while the first case body is unfolded.

10 The seventh aspect of the invention is folding portable telephone apparatus according to the sixth aspect of the invention, wherein call duration is displayed on the display. This configuration has an advantage that it is possible to see call duration via clock display and so on in the right
15 top-and-bottom arrangement.

The eighth aspect of the invention is folding portable telephone apparatus wherein the first case body having a receiver and the second case body having a transmitter are configured to be collapsible via hinge, wherein, concerning
20 the section where the receiver or transmitter is located, the corresponding section of one main body is made into a convex section and the corresponding section of the other main body is made into a concave section and that urging means is provided for making the convex section and the concave section engaging
25 each other as well as for giving a pressing force or absorbing

force when the main body is folded. This configuration has an advantage that it is possible to place the apparatus in a pocket of clothes with the apparatus pinching the tissue of the pocket.

CLAIMS

1. A folding portable telephone apparatus comprising:

5 a folding main body;

a first display provided on the outer surface of the folding main body; and

a second display provided on the inner surface of the folding main body,

10 wherein an incoming call information is displayed on the first display while the main body is folded and the incoming call information is displayed on the second display while the main body is unfolded.

15 2. A folding portable telephone apparatus according to claim 1, wherein the incoming call information includes at least one of the telephone number of a caller and the caller's name.

20 3. A folding portable telephone apparatus according to claim 1 or 2,

wherein the information displayed on the first display is displayed on the second display when the main body has been unfolded while incoming call information is displayed on the
25 first display, and the incoming call information is deleted

from and a predetermined information is displayed on the first display.

4. A folding portable telephone apparatus according
5 to claim 1 , 2 or 3,

wherein top and bottom of incoming call information displayed on the first display is determined according to the top and bottom of incoming call information displayed on the second display.

10

5. A folding portable telephone apparatus comprising a folding main body;

a display provided on the outer surface of a folding main body for displaying information on the display,

15 wherein the display information is displayed in a first direction on the display while the main body is folded, and the information is displayed in the direction 180 degrees rotated against said first direction on the display while the main body is unfolded.

20

6. A folding portable telephone apparatus according to claim 5, wherein the display information includes call duration.

25

7. A folding portable telephone apparatus according

to claim 5 or 6, wherein the information includes an image.

8. A folding portable telephone apparatus having a main body comprising:

- 5 a first case body having a receiver;
- a second case body having a transmitter;
- a hinge provided between the first case body and the second case body so that the main body is foldable via hinge;
- a convex portion provided on the first case body and
- 10 around the receiver; and
- a concave portion provided on the second case body,
- wherein the convex portion and the concave portion are engaged each other when the body is folded.

15 9. A folding portable telephone apparatus according to claim 8, further comprising urging mechanism for giving a force to fold the main body when the main body is folded.

10 10. A folding portable telephone apparatus according to claim 9, wherein the urging mechanism includes a spring provided at the hinge so that the first case body and the second case body are pressed each other when the main body folded.

25 11. A folding portable telephone apparatus according to claim 9, wherein the urging mechanism includes magnets

provided in the tips of the main body so that the first case body and the second case body are attracted each other when the main body folded.

12. A folding portable telephone substantially as described with reference to Figures 1 to 13 of the accompanying drawings.



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Claims searched: 1 to 4

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Date of search: 29 May 2001

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Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.S): H4J (JK); H4L (LEUF)
Int Cl (Ed.7): H04M 1/02
Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	GB 2349784 A (SAMSUNG)	1,2
A	GB 2343324 A (SAMSUNG)	
X	GB 2326051 A (MOTOROLA) see figs 1, 2 & 8b and page 9 line 15 to page 10 line 3	
A	JP 060037697 A (NEC)	

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